A TRIBUTE TO THE SERVICES OF SIR ARCHIBALD McINDOE TO PLASTIC SURGERY

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by

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TO ALL OF us who knew Archibald McIndoe our memory of him will always remain so vivid that a biography, no matter how long after his death, will be superfluous—such was his personality. But so rapidly does time pass that there will be here to-day many who knew him only by sight, and not a few who never knew him at all. It will be appropriate, therefore, to attempt for the benefit of these members of my audience a sketch of McIndoe as I knew and saw him, and in making this attempt I crave the indulgence of those who knew him well if my sketch differs from the image of their personal mental portrait.

The milestones of his life and brilliant career may be briefly stated for they can be found in the records provided by the many tributes paid to him at the time of his death and before. He was born in Dunedin in 1900 and qualified with distinctions in medicine and surgery at the University of Otago in 1923. After a year of resident appointments he went on a foundation scholarship to the Mayo Clinic, where he stayed more than five years before coming to London in 1930. Under the famous Mayo brothers he became a highly accomplished abdominal surgeon and it looked to his contemporaries at the time that this would be his life's work. But on reaching London he naturally and immediately fell under the enchantment of that genius, his cousin Harold Gillies, also from Dunedin.

Before long appointments came to him in plenty, stemming from the post of chief assistant to Sir Harold at St. Bartholomew's Hospital and from the continuation of his abdominal work at the Hospital for Tropical Diseases. It was not long, however, before plastic surgery demanded his whole professional endeavour, and in 1938 he became Civilian Consultant to the Royal Air Force, an appointment which was to set the pattern, in the main, of the rest of his career. At the outbreak of the war he was posted to East Grinstead under the E.M.S.—the Emergency Medical Service—of the Ministry of Health, and thus it was that through McIndoe the East Grinstead–R.A.F. link was forged to become so strong that it became a chain of fame which encircled the world. Laymen and doctors knew of it far and wide. Honours and distinctions from this country and abroad were his in profusion. After the war, and right up to his death in 1960 at the age of 59, besides the unit at East Grinstead and an enormous

private practice, his principal contribution to surgical progress was here at the Royal College of Surgeons. Perhaps his appointment to the College Council and ultimately his election as Vice-President were the distinctions he prized above all others. His work for the College was unstinted because it was given with the absolute conviction of the importance of the College to the advancement of surgery and surgical teaching in Britain and throughout the world.

His ability and skills were prodigious and his interests wide. It is with temerity that I give my impressions of him as a plastic surgeon. I was captivated as a young man, assisting him in the early days of the war, by his craftmanship and the speed and apparent ease with which he achieved meticulous accuracy. He brought an inquisitive and creative mind to attempts to improve techniques in procedures, the results of which did not satisfy him. This was his research—clinical research—a very important aspect of research to surgery, and the only type his training, and the training of many of us, had qualified him to attempt. He was very conscious of his inadequacy for basic research and later spent much time and effort trying to remedy this state of affairs for succeeding generations both at East Grinstead and here at the College. He excelled as a clinical teacher, rightly demanding a high standard of endeavour in his trainees. The pace was hot and the hours were long, but he was in every respect a leader and thus never lacked devotees. In my view his greatest professional contribution to the needs of our times was the combination of surgical skill and common-sense psychotherapy he lavished upon the burnt and injured R.A.F. personnel entrusted to his care during the war. The gravity of situations is reputed to cast up men and women of stature to meet them—the Churchillian miracle. McIndoe created his legend to sustain " the few " when the fate of all of us depended on them and backed the legend with solid achievement. Nothing was too much trouble for McIndoe if it would assist any of these who came under his care, whatever facet of their lives was involved. He made it his business to know everything about each one and nothing less than maximum effort to help on his part and on the part of those around him was tolerated. His long-term interest in their mental and physical rehabilitation was no less than his surgical endeavour in their time of crisis. The famous Guinea Pig Club is but one example of the outcome of his devotion. The knowledge of the existence of McIndoe and all he stood for must have comforted many an airman in moments of apprehension in their dangerous lives. This imperishable contribution to victory in the darkest days of this country's history is his lasting memorial.

These few words, however inadequate, must suffice to introduce the man, for a memorial lecture to a plastic surgeon must include some clinical substance to do him proper honour. It seemed to me fitting to report my own experience in a subject to which Archie McIndoe made original contributions.

HYPOSPADIAS

I present to you an analysis of 109 cases seen in the Department of Plastic Surgery at the Hospital for Sick Children by my assistants and myself in the 15 years 1950–1965.

I have divided them anatomically into three groups: glandular, penile and perineal; and the penile into three subgroups: subglandular, penile shaft and peno-scrotal (Table I). Almost all have been treated by the Denis Browne procedures, and whilst difficulties have been encountered, as will be described, I would like to say at the outset that there has been no case in which a successful result has not been achieved. No matter what method is used difficulties are inherent in the treatment of a mobile, distensible organ, exceptionally susceptible to post-operative oedema and unavoidably vulnerable to faecal and urinary contamination. The problem is to reduce the harmful consequences of these hazards by technical resourcefulness and nursing expertise, the one being as important a

TABLE I

HYPOSPADIAS

109 *cases treated in Plastic Department, Hospital for Sick Children*, 1950–1965

Classification		
Glandular		40
Penile		66
(i) Subglandular	25	
(ii) Shaft	34	
(iii) Peno-scrotal	7	
Perineal		3

factor as the other. Like most difficult surgical problems, it must surely be true of hypospadias that there is more than one method of achieving the same degree of success. I think it is wrong to maintain that there is only one way of doing right in the treatment of this or any other surgical condition. But I believe that the Denis Browne technique is one of the procedures capable of yielding results as good as any so far obtained, and better than many. It may well be that individual surgeons could produce a personal series of cases with better figures than those I am going to present to you, but it is important in my view when deciding for or against a method to see how it works in the hands of a whole team and in a teaching unit, where individual experience necessarily varies, because these are the conditions under which so many patients are treated. In saying this, however, I would not wish to imply that seniority does more than reduce the incidence of complications. It certainly has not excluded them in my hands.

Glandular hypospadias

This comparatively minor abnormality represents no less than 40 of 109 cases seen. This large proportion coincides with the experience of others interested in treating this condition to whom I have spoken. A high proportion of the total number seen are of this minor degree, which is

fortunate. Even so correct advice to, and reassurance of, worried parents is most important (Table II).

It is my belief that surgical procedures to put the external meatus on the tip of the glans for aesthetic reasons in these cases are contra-indicated. They are often followed by meatal stricture for which meatotomy reproduces the original condition which amounts to no more than an elongated meatus on the glans. Such a patient is at no disadvantage except that in some, as Denis Browne has pointed out, there is a transverse mucosal bar against which the stream of urine strikes, causing it to spray and soil the clothes. Immediately dorsal to the bar is a small recess which in the normal urethra is in the position of the lacuna magna of the fossa navicularis. With one blade of a pair of fine scissors in this recess the bar can be cut across and, with a single catgut stitch on each side of the mucosa, the lacuna incorporated to smooth the dorsal urethral wall, so removing the obstruction to the normal forward projection of the stream. This procedure, as described by Denis Browne, takes only a few seconds and should always be done where indicated.

TABLE II

GLANDULAR HYPOSPADIAS

Total cases = 40	
Treatment	
(i) Division of transverse bar ..	27
(ii) Meatotomy	2
No treatment required	13

Penile hypospadias

There were 66 cases. The breakdown of these 66 cases is as follows: subglandular 25 (Tables III–VI), penile shaft 34 (Tables VII–IX), and peno-scrotal 7 (Table X).

With few exceptions the routine procedure has been to treat the cases of hypospadias of the penile shaft and of the peno-scrotal hypospadias with the two-stage Denis Browne operation, and to treat the subglandular cases with the second-stage Denis Browne operation alone, since in these there is little or no chordee, thus obviating the need for a preliminary straightening operation. The perineal group presents no more difficulty than the peno-scrotal (Table XI).

A number of points arise from analysis of the cases meriting comment:

(*a*) *Age at which treatment was commenced*

The average age was just over three years. In my opinion this is about six months beyond the minimum age at which operation has the best chance of success, although this does not of course mean that the chance is reduced by the child being six months older. It was dictated by the age at which the children were first seen and by the length of the delay in getting the children into hospital after the first consultation although this is minimized by a priority system of admissions. I believe there is an advantage in waiting until the child is at least two-and-a-half, both because

TABLE III

PENILE HYPOSPADIAS (SUBGLANDULAR)

Total cases = 25

Treatment

Denis Browne second-stage operation	19
Others: (*a*) Ombrédanne operation	2
(*b*) Elliott Blake operation	1
(*c*) Barcat operation	1
Awaiting operation	1
Operation performed elsewhere	1
	25

TABLE IV

PENILE HYPOSPADIAS (SUBGLANDULAR)

Repair with Denis Browne second-stage operation (19 *cases*)

Average age first seen	2.5 years
Average age first treated ..	3.5 years
Average time in-patient care ..	20.65 days

TABLE V

PENILE HYPOSPADIAS (SUBGLANDULAR)

Analysis Denis Browne second-stage repair (19 *cases*)

Complications:

4 fistulae	21%
3 meatal strictures	15.7%
2 catheter trouble	10.5%

Two of the fistulae needed two operations each to secure closure.

TABLE VI

PENILE HYPOSPADIAS (SUBGLANDULAR)

Analysis Denis Browne second-stage repair (19 *cases*)

Treatment of complications:

Fistula closure .. .. (average in-patient care 13 days)	4 cases
Meatotomy	2 cases
Meatal dilatation	1 case

TABLE VII

PENILE HYPOSPADIAS (SHAFT)

Total cases = 34

Treatment: Denis Browne first- and second-stage operations	29
Others:	
Elliot Blake operation	1
Awaiting second-stage D.B. operation	1
Awaiting first- and second-stage D.B. operations ..	2
Operation elsewhere	1
	34

TABLE VIII

PENILE HYPOSPADIAS (SHAFT)

Repair with Denis Browne first- and second-stage operations (29 cases)

Average age first seen	1.4 years
Average age first treated	3.15 years
Average time in-patient care, first stage	12.5 days
Average interval between stages	1.16 years
Average time in-patient care, second stage ..	17.4 days

the parts are then big enough to facilitate technical accuracy and because the control of micturition will then obviate the need to wear napkins after surgery in most cases. I do not believe that there is any advantage in *deliberately* waiting after the age of two-and-a-half. There is certainly a disadvantage in the child being much over three to four years old because

TABLE IX

PENILE HYPOSPADIAS (SHAFT)

Analysis of 29 cases treated with Denis Browne first- and second-stage operations

Complications:

Catheter trouble at first operation	3	=	10.3%
Catheter trouble at second operation	8	=	27.5%
Fistulae	6	=	20.5%
Repeat of first-stage operation	2	=	6.9%
Meatal stricture	2	=	6.9%
Wound sepsis	1	=	3.45%

TABLE X

PENILE HYPOSPADIAS (PENO-SCROTAL)

Total cases = 7

Treatment

Denis Browne first- and second-stage operations	6
Died before treatment (multiple deformities)	1

Analysis of 6 cases treated by Denis Browne first- and second-stage operations

Average age when first seen	1.4 years
Average age when first treated	2.9 years
Average time in-patient care, first operation	14 days
Average interval between stages	7.5 months
Average time in-patient care, second operation	19.5 days

Complications

Catheter trouble	2
Fistula	2
Wound sepsis	1
Urethral hair	1

TABLE XI

PERINEAL HYPOSPADIAS

Three cases

Two cases treated by Denis Browne first- and second-stage operations

Average age first seen	2.75 years
Average age first treated	3.25 years
Average time in-patient care, first stage	7 days
Average interval between stages	4.5 months
Average time in-patient care, second-stage	19 days

Complications

1 fistula (male hermaphrodite)
1 case awaiting treatment

the greater reaction of the older child to the restraint and discomfort, with consequent digital interference, enhances the risk of complications, particularly with the catheter.

(*b*) *Catheter trouble*

This has been the most potent source of breakdown of the suture line and fistula formation following the second-stage operation. I believe it is almost always due to incision of the perineal urethra too far forward so that the catheter is looped instead of emerging in a straight line. So

important is this that if drainage is not satisfactory the child must be anaesthetized again and a new opening made, even if this were to mean undoing and resuturing part of the repair to re-insert the catheter as can happen sometimes. A self-retaining catheter should be used. I prefer the Malecot. I leave the catheter *in situ* on average 12 days.

I also use a catheter for a few days after the first-stage operation to keep the suture line dry, but of course in this case bring the catheter out of the external meatus. A self-retaining catheter is not necessary for this. A soft rubber or plastic catheter is quite adequate and painless to remove.

(*c*) *Meatal stricture*

This is the consequence of making the two triangular excisions of skin on the ventral surface of the glans too far medially, particularly at their anterior extremities during the second-stage operation. It is most important to keep these well apart from each other so that a wide track of skin remains right up to the external meatus. Meatal stricture is the second most important technical failure after catheter trouble in this series in causing fistulae, and these cannot be closed until the stricture is completely dealt with by dilatation or meatotomy.

(*d*) *Fistulae*

These occurred in 13 of 56 cases and an average of 13 days' in-patient care was needed to close them. In two patients two attempts were required before closure was achieved. I am convinced that if a fistula occurs it is a waste of time to attempt to close it without allowing at least three months to elapse for all induration to disappear. Some close spontaneously in this time and those which have done so are included in the figure of 13. Some were minute, but all have been recorded. I use meticulous suture in three layers, closing the lining with a continuous running 6 zero atraumatic catgut suture and drawing the subcutaneous tissues together over this with buried interrupted sutures of the same material. The outer layer is closed with interrupted sutures of fine nylon on an atraumatic needle. I do not use double stop stitches for fistula repair. The operation is always accompanied by urinary diversion through perineal drainage for 10 days.

(*e*) *Modification*

The only difference from the operation described by Denis Browne, which I now routinely employ, is to free the prepuce round the full circumference of the glans and split its inner layer vertically as far as its free edge in the midline dorsally, thus spreading the inner layer as two wings. This provides additional material for repair of the ventral surface. In a two-stage repair the prepuce is of course split in this way at the first operation, but in subglandular cases requiring only the second-stage procedure it is done with this, and causes no shortage of skin on the dorsum of the shaft. Since doing this, the incidence of fistulae has been appreciably reduced.

(f) Length of hospitalization

The average in-patient stay for first-stage operations in all groups is 11 days and for second-stage operations 19 days. The average stay for fistula closure was 13.5 days. For all three procedures these figures include an average of two days of hospitalization prior to operation.

POSSIBLE FUTURE TRENDS IN PLASTIC SURGERY

Before closing I would like to touch on some of the problems, national and international, surrounding the future development of plastic surgery. In doing so I must make it plain that my remarks express my personal opinions and are not intended to reflect the opinion of any body or department. This does not preclude me from paying tribute to the great amount of work already done, and the thought devoted to these very important matters, by the Council of this College and of our Association, by the Ministry of Health and by the International Confederation for Plastic Surgery and the various national plastic associations belonging to it.

The problems facing plastic surgery here and throughout the world are in essence to improve the standards of training, and to facilitate the recognition by the medical profession of authoritative evidence of competence.

In the many countries—indeed, most countries—in which the approach to the specialist by the patient is direct it is also desirable for the public to be able to recognize this competence too. As a start may I refer you to McIndoe's presidential editorial which appears in the issue of the *British Journal of Plastic Surgery* of April 1949. It is too long to read here in full, but to do so is worth the effort. From it the following three sections I find of particular interest:

"It is not yet clear, however, what constitutes a competent plastic surgeon or even how he should be trained. There is no prescribed or advised course of training, no examination, no diploma or degree. There are no standards of accomplishment by which one can be distinguished from another other than the opinion of a senior that young Mr. So-and-So is a first-class plastic surgeon who should be admirably suited to the post for which he is applying."

"Tribute must be paid to those of our plastic elders who trained so many pupils by variations of the apprenticeship system. Some of these apprenticeships were too short, others too long; but in none of them were any tests of knowledge or proficiency applied. Beyond the personal recommendation of the teacher or the claims of the trainee, no-one knew what degree of proficiency had been attained. Nor does anyone know today."

"The condition of affairs will not be remedied until the Association undertakes, firstly, to lay down the requirements for basic and special training, the length of time the latter should persist, its conduct and character, and the places where it should be undertaken. Secondly, I believe that the Association should advance a claim for the establishment of a Faculty in Plastic Surgery under the aegis of the Royal College of Surgeons, by means of which these matters can be controlled and decided. Whether or not a Fellowship could be established is a matter for the future. Certainly this would be better than a diploma or qualifying degree which has been shown by experience in other specialties to have failed to sustain its earlier promise.

" We require a high standard as a goal and test of proficiency which will serve not only to raise standards within the specialty, but outside it to lift our art to an honoured position in the estimation of other specialties. Under the inspiration and leadership we have so far enjoyed in our young association we have travelled far and done much. Is this not the next logical step?"

So wrote McIndoe in 1949. Much has been done since then and much is being done now. There is a general recognition and awareness of the needs although ideas quite properly have been modified by time. We have clearly advanced a long way in respect of training in which the Association has laid down the desirability of four years' general surgery, four years' plastic surgery and the F.R.C.S. as the criteria, and our Association is to be congratulated upon its initiative and pioneering effort.

What then needs to be done at home? I strongly believe—as I know do others, although I speak personally—that anything and everything that is done should be under the aegis of this College, which enjoys an international reputation unexcelled by any surgical body in the world. Our acceptance by the College is the hallmark of our worth. But this premise, which is to me basic, necessarily complicates our problems in some ways since the College has to take account of the needs of all the specialist bodies under its roof besides the very large number not included in them. Moreover, the problems of all of us are further complicated by the well recognized and much considered complexities which might arise if this country joins the Common Market. The degree of reciprocity and of freedom of interchange of domicile of practising surgeons will concern all of us. In my opinion it is highly desirable that we evolve a system by which a man or woman can produce evidence of training and proficiency when applying for jobs. Although this is obviously not so essential for British nationals when applying for jobs at home, it is of vital importance for overseas trainees when returning to their home lands and for any of our own graduates who decide to practise abroad. We all know the shortcomings of the examination system, which may test memory more than experience, and of the testimonial system, which may be coloured by the stature of the teacher in the eyes of the scrutineer. A statement of fact in the form of a certificate testifying to the length of time a trainee has spent in a recognized unit or hospital department is a possible compromise. I am convinced of the urgency of the need to provide all trainees, and especially the men and women who come from overseas to train here, with visible proof, carrying the hallmark of this College, of the nature and length of training received and of the degree of competence achieved. If this does not become a reality soon, I believe the numbers coming to this country will rapidly diminish, which will be greatly to the detriment of plastic surgery both here and abroad; the opportunities for training here are infinitely better than practically everywhere else in the world, besides which we need the men and women to come from abroad both to keep alive our pre-eminence as a world centre in plastic surgery and also to meet our own manpower shortage.

It is also my belief that nothing but good can come from official recognition of accredited specialists in plastic surgery and other specialties, and whilst the problems involved in achieving this unobjectionably are admittedly complex I do not believe they are insoluble. Indeed, their solution is an urgent necessity; the difficulties are merely a measure of the challenge which we must meet. To quote McIndoe's presidential editorial again: "It is not yet clear what constitutes a competent plastic surgeon." Seventeen years later it is still not too clear. I hope it will not remain so much longer for the sake of our trainees from home and abroad and for the benefit of the profession and the public.

Finally, what of the situation overseas? I have seen at close quarters in the last eight years through the International Confederation the difficulties facing pioneering plastic surgeons and emerging national associations in many countries of the world, and have had a hand in trying to resolve the difficulties of some of them. Their fate has depended much on the attitude of their country's main national surgical body, which has sometimes been nothing short of reactionary entrenchment against a new idea, but it has also depended upon the personality and determination of the newly returned plastic surgeons from training almost always in Great Britain or the U.S.A. My admiration for their fighting spirit, their unquenchable enthusiasm and surgical achievement, often in very indifferent conditions, is profound, and their sheer worth has on more than one occasion been the determining factor in securing recognition for plastic surgery by their colleagues. None the less it is true, and will remain so for many years to come, that standards of training, and consequently of performance, will vary immensely amongst countries in which plastic surgery is now recognized either by the national professional body or the department of health or both. This is no place to give you a detailed chronicle of the current state of affairs in each country of the International Confederation, but this will be presented at the international congress next year. Suffice it to say that it is one of the aims of the Confederation to assist in the effort to elevate, whenever help is asked, the standing and standard of training of plastic surgeons in any land. This is in the McIndoe tradition of service, and I commend to you the onus upon all of us in Britain, who enjoy so many advantages in plastic surgery created for us by our predecessors, to give as much service as we can, as often as we can, to those less fortunate than ourselves. This I believe to be our obligation; the demand of our heritage, to which Sir Archibald McIndoe contributed so much.